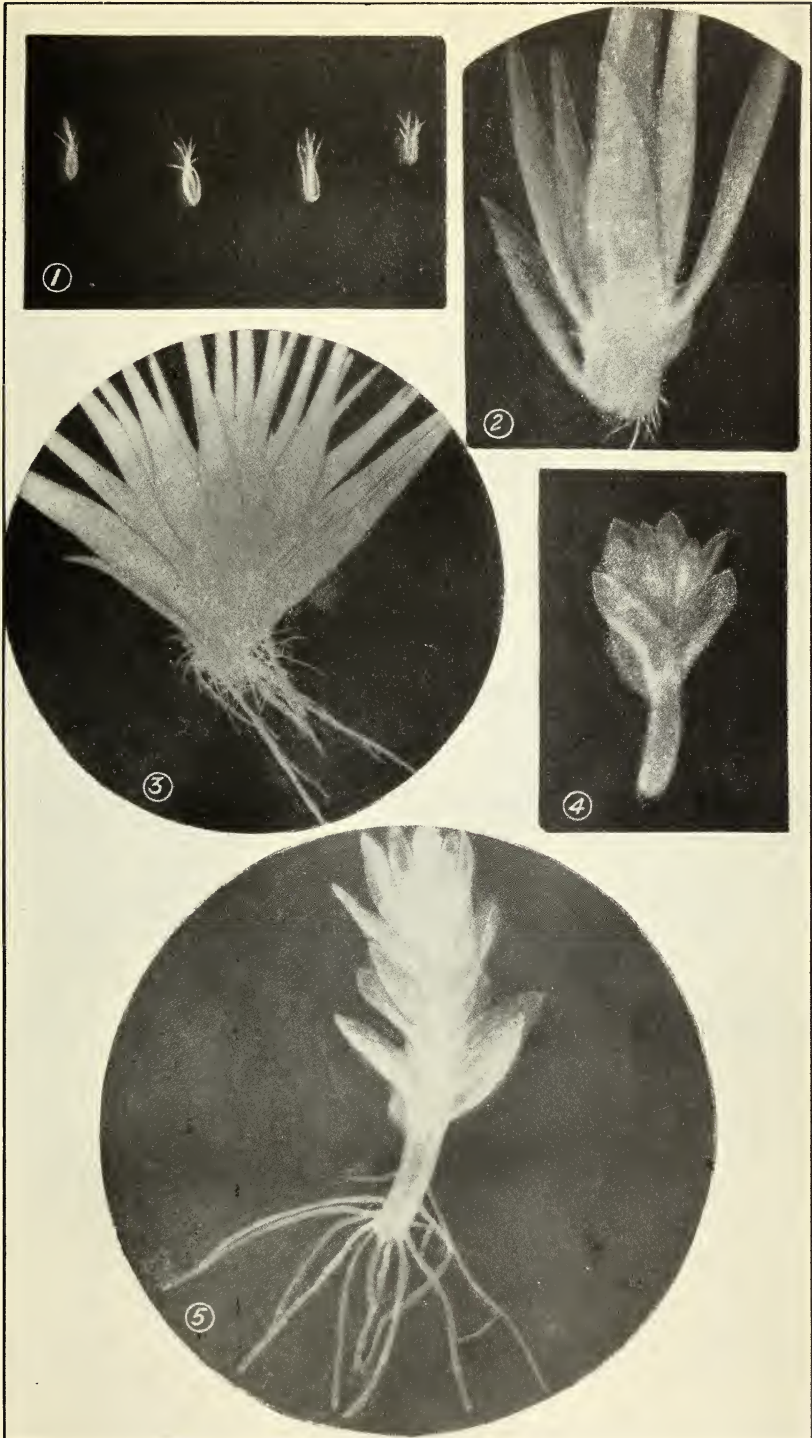


A NEW METHOD OF ASEXUAL PROPAGATION IN MOSSES.

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CAMPYLOPUS TRICHODES is a moss growing in great abundance on the top of Table Mountain, Capetown. It is found in cushion-like patches varying in size from thin strips growing in the cracks of rocks to large patches on the ground. I found on nearly every patch examined numbers of small loose pieces of what was evidently the same moss. These were all about the same size and of the same appearance. Each piece has a small stem of about 2 mm. in length and several leaves. When dry the leaves are yellowish and are screwed up, but with the apices spreading. A micro-photograph of some, magnified about two and a half times, is shown in Plate IV, Fig. 1. When placed on damp soil the leaves very soon absorb water and spread out, whilst some time later rhizoids make their appearance from the base of the stem, so that a new moss plant is formed. One of these, with spreading leaves and rhizoids just developing, is shown in Fig. 2. Each piece thus appears to be a form of bulbil, but there is here no storage of food or water as in ordinary bulbils for initial growth until green leaves appear. In the case of these moss bulbils this is overcome by the readiness with which the leaves absorb water and assume their nutritive function. Dissemination is arranged for by the bulbils being light and at the same time the spreading of the apical portions of the leaves have a peculiar significance. If a bulbil is dropped from a height it invariably drops with the stem part downwards, the whole bulbil acting as a kind of parachute. Thus if blown about by the wind the bulbils will drop in a position ready to commence growth, other conditions being favourable. I brought some from Table Mountain to Pretoria, keeping them in an envelope for three weeks. They then grew quite easily when placed on damp soil under glass. The rhizoids produced first are brown, with oblique septa, and these penetrate the soil, but further protonemal filaments can probably be produced on which buds will develop as in other mosses. The ease with which protonemal filaments can be made to develop from almost any part of the gametophyte, e.g. severed parts, is well known, but this cannot be regarded as a means available by the plant for reproduction except in case of accident, any more than cuttings of rose trees could be cited as a means of reproduction for a rose tree. Of course the formation of gemmae, whether on the leaves or in cups, is specially for the purpose of reproduction. The formation of these moss bulbil is also of the same nature. In every case it is the terminal portion of the stem that develops into the bulbil and not lateral branches. Special provision in the way of the formation of an absciss layer is necessary in order to discard the bulbil. Lateral branches are in many cases given off afterwards below this absciss layer, so that the plant is provided with more leafy axes.



GERMINATION OF MOSS BULBILS.